

FISH DIVERSITY IN ITHIPUZHA AND MURINJAPUZHA, KERALA, INDIA

K.V. ZEENA^{1,2} AND K.S. JAMEELA BEEVI^{1,3}¹PG and Research Centre, Department of Zoology, Maharaja's College, Ernakulam, Kochi 682 011, Kerala, India.²Email: zeenasalim@gmail.com³Email: ksrameela@yahoo.com

A survey has been conducted on the fishes in Ithipuzha and Murinjapuzha, two tributaries of River Muvattupuzha, Kerala, from October 2009 to May 2010. Cast net, gill net, and scoop nets were used for the study. 69 species of fishes, belonging to 54 genera, 36 families and 13 orders were collected and identified. Fishes belonging to the Order Perciformes dominated the study with 15 families, 20 genera and 25 species, followed by the Order Cypriniformes with 1 family, 6 genera and 14 species. Rare species like *Pristolepis marginata* Jerdon, *Anabas cobojus* (Hamilton-Buchanan), *Butis butis* (Hamilton-Buchanan), *Eleotris fusca* (Forster), *Puntius muvattupuzhaensis* Jameela Beevi and Ramachandran, *Danio malabaricus* (Day), *Pterocryptis wynaadensis* (Day), *Pseudeutropius michelli* Günther, *Zenarchopterus striga* (Blyth), *Tetraodon fluviatilis* Hamilton, *Arothron leopardus* (Day) and *Triacanthus biaculeatus* (Bloch) were collected during the study. Presently, these rivers are under severe ecological degradation, due to sand mining and other anthropogenic activities. Despite this, the present study showed rich fish diversity in these rivers, and hence, it is suggested that these rivers be protected to conserve it.

Key words: habitat degradation, sand mining, conservation, anthropogenic activities, threats

INTRODUCTION

Biodiversity studies have gained much attention recently. Ichthyofaunal studies were done in different rivers of India (Jayaram *et al.* 1982; Arunachalam and Sankaranarayanan 1999; Sarkar and Banerjee 2000; Bhatt 2003; Mishra *et al.* 2003; Kar *et al.* 2006; Bhakta and Bandyopadhyay 2008; Karmakar *et al.* 2008; Palavai and Davidar 2009; Patra and Datta 2010). The information of diversity from these studies help us understand the need to conserve rare species and prevent exploitation for a sustainable environment. Conservation of fish diversity assumes topmost priority under the changing circumstances of gradual habitat degradation (Kar *et al.* 2006).

The riverine fishery of Kerala is highly diverse and is around 207 species (Gopi 2000). Many species of fishes documented in earlier studies have not been found in recent reports (Ajithkumar *et al.* 2003). Though a number of studies have been conducted on the fish diversity in the rivers of Kerala (Bijukumar and Sushama 2001; Raju Thomas *et al.* 2001; Jameela Beevi and Ramchandran 2002, 2009; Ramchandran *et al.* 2001; NBSAP 2002; Ajithkumar *et al.* 2003; Prasanth Narayanan *et al.* 2005; Raghavan Rajeev *et al.* 2008; Swapna 2009) not much study has been done on the diversity of Ithipuzha and Murinjapuzha. In view of this paucity of information, the present survey was carried out to document the fishes of Ithipuzha and Murinjapuzha.

METHODOLOGY

After preliminary surveys, nine sampling stations were

fixed. Collections were made every month from October 2009 to May 2010 using cast, gill, and scoop nets. Samples were also collected from streams and channels opening into various stations, since they are the feeding and breeding grounds of many species. Fishes were preserved in 10% formalin. The morphometric studies were done following Jayaram (1999). Day (1878), Jayaram (1999), Nelson (1984, 2006), and Talwar and Jhingran (1991) were used to identify and classify the collected fishes.

RESULTS AND DISCUSSION

Muvattupuzha river is one of the major rivers in Kerala; it is 123 km long and has a drainage area of 1,554 sq. km. It divides into Ithipuzha and Murinjapuzha at Vettikkattumukku in Ernakulam district, and flows through Kottayam district to join Vaikom lake (Fig. 1). Sixty-nine species of fishes belonging to 54 genera, 36 families and 13 orders were collected. The systematic positions of the collected species are given in Table 1. Order Perciformes showed maximum diversity with 15 families, 20 genera, and 25 species. Order Cypriniformes was second with a single family – Cyprinidae with 6 genera and 14 species. Most of the species collected have ornamental as well as potential commercial value. Puffer fishes like *Carinotetraodon travancoricus* Hora and Nair, *Arothron leopardus* (Day), *Tetraodon fluviatilis* Hamilton and *Triacanthus biaculeatus* (Bloch) were also present in the collection.

According to the local fishermen, many species of fishes, which were abundant in past years, showed a decline in recent catches, due to destruction and degradation of their habitat by ecological and man-made interventions. The recent

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Table 1: Systematic position of fishes collected from Ithipuzha and Murinjapuzha river, Kerala

Sl. No.	Scientific Name	Ithipuzha	Murinjapuzha	Sl. No.	Scientific Name	Ithipuzha	Murinjapuzha	
I.	Order: Perciformes							
	A. Family: Nandidae				M. Family: Scatophagidae			
	Genus: <i>Pristolepis</i> Jerdon				Genus: <i>Scatophagus</i> Cuvier			
1	<i>Pristolepis marginata</i> Jerdon	+	+	23	<i>Scatophagus argus</i> (Linnaeus)	-	+	
	Genus: <i>Nandus</i> Valenciennes				N. Family: Sillaginidae			
2	<i>Nandus nandus</i> (Hamilton-Buchanan)	+	+		Genus: <i>Sillago</i> Cuvier			
	B. Family: Anabantidae				24	<i>Sillago sihama</i> (Forsskål)	-	+
	Genus: <i>Anabas</i> Cuvier				O. Family: Siganidae			
3	<i>Anabas cobojius</i> (Hamilton-Buchanan)	-	+		Genus: <i>Siganus</i> Forsskål			
	C. Family: Lutjanidae				25	<i>Siganus javus</i> (Linnaeus)	-	+
	Genus: <i>Lutjanus</i> Bloch			II.	Order: Cypriniformes			
4	<i>Lutjanus johnii</i> (Bloch)	-	+		A. Family: Cyprinidae			
5	<i>Lutjanus argentimaculatus</i> (Forsskål)	+	+		Genus: <i>Cirrhinus</i> Cuvier			
	D. Family: Gobiidae				26	<i>Cirrhinus mrigala</i> (Hamilton-Buchanan)	+	+
	Genus: <i>Glossogobius</i> Gill				Genus: <i>Labeo</i> Cuvier			
6	<i>Glossogobius giurus</i> (Hamilton-Buchanan)	-	+		27	<i>Labeo dussumieri</i> (Valenciennes)	+	+
	Genus: <i>Awaous</i> Valenciennes				Genus: <i>Puntius</i>			
7	<i>Awaous grammepomus</i> (Bleeker)	+	+		Hamilton-Buchanan			
	Genus: <i>Stenogobius</i> Bleeker				28	<i>Puntius mahecola</i> (Valenciennes)	+	+
8	<i>Stenogobius malabaricus</i> (Day)	+	+		29	<i>Puntius vittatus</i> Day	+	+
	E. Family: Eleotridae				30	<i>Puntius punctatus</i> Day	+	+
	Genus: <i>Butis</i> Bleeker				31	<i>Puntius filamentosus</i> (Valenciennes)	+	+
9	<i>Butis butis</i> (Hamilton)	-	+		32	<i>Puntius parrah</i> Day	+	+
	Genus: <i>Eleotris</i> Schneider				33	<i>Puntius sarana sarana</i> (Hamilton)	+	+
10	<i>Eleotris fusca</i> (Forster)	-	+		34	<i>Puntius sarana subnasutus</i> (Valenciennes)	+	+
	F. Family: Ambassidae				35	<i>Puntius muvattupuzhaensis</i> Jameela Beevi and Ramachandran	+	+
	Genus: <i>Parambassis</i> Bleeker				Genus: <i>Rasbora</i> Bleeker			
11	<i>Parambassis thomassi</i> (Day)	+	+		36	<i>Rasbora daniconius</i> (Hamilton)	+	+
	Genus: <i>Ambassis</i> Cuvier				Genus: <i>Amblypharyngodon</i> Bleeker			
12	<i>Ambassis ambassis</i> (Lacepède)	+	+		37	<i>Amblypharyngodon chakaiensis</i> Babu & Nair	+	+
	G. Family: Gerreidae				38	<i>Amblypharyngodon microlepis</i> (Bleeker)	+	+
	Genus: <i>Gerres</i> Cuvier				Genus: <i>Danio</i> Hamilton-Buchanan			
13	<i>Gerres filamentosus</i> Cuvier	+	+		39	<i>Danio malabaricus</i> (Day)	+	+
14	<i>Gerres poletii</i> Cuvier	-	+					
	H. Family: Cichlidae				III.	Order: Siluriformes		
	Genus: <i>Eetroplus</i> Cuvier				A. Family: Siluridae			
15	<i>Eetroplus suratensis</i> (Bloch)	+	+		Genus: <i>Ompok</i> Lacepède			
16	<i>Eetroplus maculatus</i> (Bloch)	+	+		40	<i>Ompok malabaricus</i> (Valenciennes)	+	+
	I. Family: Channidae				Genus: <i>Pterocryptis</i> (Day)			
	Genus: <i>Channa</i> Scopoli				41	<i>Pterocryptis wynaadensis</i> (Day)	-	+
17	<i>Channa striata</i> (Bloch)	+	+		Genus: <i>Wallago</i> Bleeker			
18	<i>Channa marulius</i> (Hamilton-Buchanan)	+	+		42	<i>Wallago attu</i> (Schneider)	+	+
19	<i>Channa diplogramma</i> (Day)	+	+		B. Family: Schilbeidae			
	J. Family: Leleognathidae				Genus: <i>Horabagrus</i> Jayaram			
	Genus: <i>Leleognathus</i> Lacepède				43	<i>Horabagrus brachysoma</i> (Günther)	+	+
20	<i>Leleognathus equulus</i> (Forsskål)	-	+		Genus: <i>Pseudeutropius</i> Bleeker			
	K. Family: Sciaenidae				44	<i>Pseudeutropius mitchelli</i> Günther	-	+
	Genus: <i>Daysciaena</i> Talwar				C. Family: Bagridae			
21	<i>Daysciaena albida</i> (Cuvier)	-	+		Genus: <i>Mystus</i> Scopoli			
	L. Family: Carangidae				45	<i>Mystus oculatus</i> (Valenciennes)	+	+
	Genus: <i>Caranx</i> Lacepède							
22	<i>Caranx sexfasciatus</i> Quoy & Gaimard	-	+					

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Table 1: Systematic position of fishes collected from Ithipuzha and Murinjapuzha river, Kerala (contd.)

Sl. No.	Scientific Name	Ithipuzha	Murinjapuzha	Sl. No.	Scientific Name	Ithipuzha	Murinjapuzha
	D. Family: Ariidae			VIII.	Order: Synbranchiformes		
	Genus: Arius Valenciennes			A.	Family: Mastacembelidae		
46	<i>Arius subrostratus</i>	-	+		Genus: Mastacembelus Scopoli		
	Cuvier & Valenciennes			58	<i>Mastacembelus armatus</i>	-	+
47	<i>Arius arius</i> Day	-	+		(Lacepède)		
	E. Family: Clariidae				Genus: Macrognathus Lacepède		
	Genus: Clarius Scopoli			59	<i>Macrognathus guentheri</i> (Day)	-	+
48	<i>Clarius dussumieri dussumieri</i>	-	+				
	Valenciennes			IX.	Order: Tetraodontiformes		
	F. Family: Heteropneustidae			A.	Family: Tetraodontidae		
	Genus: Heteropneustes Müller				Genus: Tetraodon Linnaeus		
49	<i>Heteropneustes fossilis</i> (Bloch)	-	+	60	<i>Tetraodon fluviatilis</i> Hamilton	-	+
					Genus: Carinotetraodon Benl.		
IV.	Order: Elopiformes			61	<i>Carinotetraodon travancoricus</i>	+	+
	A. Family: Megalopidae				Hora & Nair		
	Genus: Megalops Lacepède				Genus: Arothron Müller		
50	<i>Megalops cyprinoides</i> (Broussonet)	+	+	62	<i>Arothron leopardus</i> (Day)	-	+
				A.	Family: Triacanthidae		
V.	Order: Pleuronectiformes				Genus: Triacanthus Cuvier		
	A. Family: Soleidae			63	<i>Triacanthus biaculeatus</i> (Bloch)	-	+
	Genus: Synaptura Cantor						
51	<i>Brachirus orientalis</i>	+	+	X.	Order: Anguilliformes		
	(Bloch & Schneider)			A.	Family: Anguillidae		
	B. Family: Cynoglossidae				Genus: Anguilla Schrank		
	Genus: Cynoglossus			64	<i>Anguilla bengalensis</i> (Gray)	-	+
	Hamilton-Buchanan						
52	<i>Cynoglossus cynoglossus</i>	-	+	XI.	Order: Clupeiformes		
	(Hamilton)			A.	Family: Engraulidae		
					Genus: Thyssa Cuvier		
VI.	Order: Belontiiformes			65	<i>Thyssa dussumieri</i>	-	+
	A. Family: Belontiidae				(Valenciennes)		
	Genus: Xenentodon Regan				Genus: Stolephorus Lacepède		
53	<i>Xenentodon cancila</i> (Hamilton)	+	+	66	<i>Stolephorus commersonii</i>	+	+
					Lacepède		
	B. Family: Hemiramphidae				B. Family: Clupeidae		
	Genus: Zenarchopterus Gill				Genus: Dayella Talwar &		
54	<i>Zenarchopterus striga</i> (Blyth)	-	+		Whitehead		
	Genus: Hyporhamphus Gill			67	<i>Dayella malabarica</i> (Day)	+	-
55	<i>Hyporhamphus xanthopterus</i>	+	+				
	(Valenciennes)			XII.	Order: Mugiliformes		
VII.	Order: Cyprinodontiformes			A.	Family: Mugilidae		
	A. Family: Aplocheilidae				Genus: Mugil Linnaeus		
	Genus: Aplocheilus McClelland			68	<i>Mugil cephalus</i> Linnaeus	+	+
56	<i>Aplocheilus lineatus</i>	+	+				
	(Valenciennes)			XIII.	Order: Scorpaeniformes		
57	<i>Aplocheilus panchax</i> (Hamilton)	+	+	A.	Family: Platycephalidae		
					Genus: Cociella Whitley		
				69	<i>Cociella punctata</i> Cuvier	-	+

+ indicates the presence of the species; - indicates the absence of the species.

studies of Bhakta and Bandyopadhyay (2008), Raghavan Rajeev *et al.* (2008), Swapna (2009), and Palavai and Davidar (2009) also indicated that habitat loss is the main cause of reduction in fish diversity. Fish diversity and conservation represents a major environmental challenge, at the global level. It will add to existing threats to the species if no

immediate policy action is taken against human interventions. A few important management plans that result from this study for the conservation of fish species could be included into the fishery policies of the Government, such as identification and listing of threatened and endangered species, determination of population size and distribution, finding out

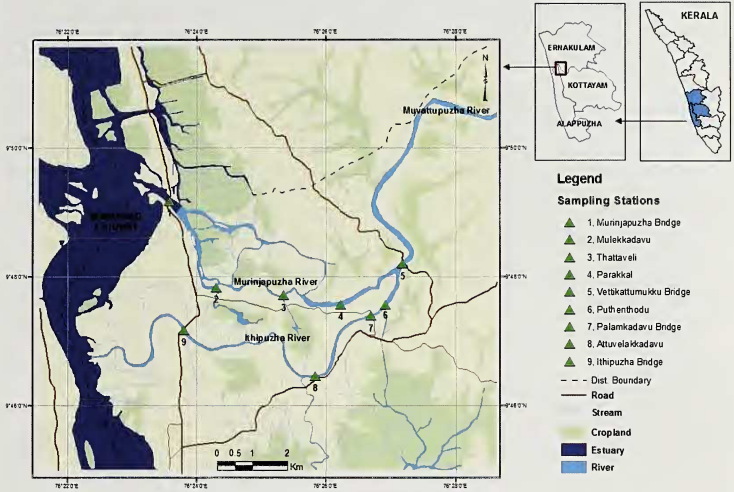


Fig. 1: Sampling stations in the present study

the breeding behaviour of threatened species, which is essential for both *ex situ* and *in situ* conservation for captive breeding and broodstock maintenance of fishes of potential economic importance (Bhakta and Bandyopadhyay 2008).

From the present study, it is clear that the rivers Ithipuzha and Murinjapuzha are rich in fish diversity. However, these rivers are facing a high degree of threat from sand mining and various anthropogenic activities, and proper management strategies should be implemented to protect and conserve the existing ichthyofaunal wealth of our nation.

ACKNOWLEDGEMENTS

The authors are grateful to the Head of the Department, Zoology, Maharaja's College, Ernakulam, for providing necessary facilities to carry out the research. The authors also express gratitude to Dr. K. Rema Devi, Scientist E & Officer-In-Charge of ZSI, Chennai, for confirmation of fish identification. One of the authors, K.V. Zeena extends her sincere gratitude to the UGC for granting her Teacher Fellowship.

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